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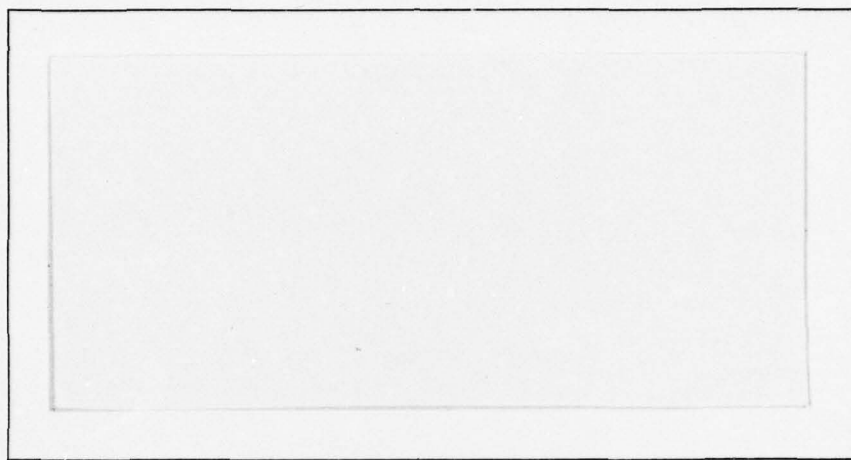
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THE INFLUENCE OF EMPLOYEE PARTICIPATION  
IN JOB REDESIGN

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Technical Report No. 12  
School of Organization and Management  
Yale University

December, 1976

Abstract

This research investigates three questions regarding employee participation in job redesign: (1) If given the same background information, will supervisors and employees focus on the same aspects of jobs in redesigning them? (2) Do employees show the same affective reactions to jobs designed by supervisors versus jobs they design themselves? (3) How does the mode of implementation affect the impact of job changes when identical changes are made? To research these questions, a 2 1/2 day simulation of an organization was conducted. Five groups of participants worked with identical job designs on the first day, then had their jobs redesigned by the supervisor or through employee participation, and then worked a second day on the new jobs. Job changes and affective responses were measured using the Job Diagnostic Survey. Results showed that supervisors focused more on vertically loading the jobs, while employees were more concerned with social aspects of the work. Employee satisfaction improved more under employee participation. Identical changes were perceived to be "better" by employees who participated in their design.

This research was supported in part by a grant to the author from the Manpower Administration, U.S. Department of Labor, under research and development grant No. 91-09-75-34, and in part by the Organizational Effectiveness Research Program, Psychological Sciences Division, Office of Naval Research, under Contract No. N00014-75-C-0269, NR 170-744 (J. Richard Hackman, principal investigator). Since grantees conducting research and development projects under governmental sponsorship are encouraged to express their own judgment freely, this report does not necessarily represent the official opinion of the Department of Labor. Reproduction in whole or in part is permitted for any purpose of the U.S. Government. Approved for public release; distribution unlimited.



REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Technical Report No. 12	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
6 (4) TITLE (and Subtitle) The Influence of Employee Participation in Job Redesign		9 (9) 4. TYPE OF REPORT & PERIOD COVERED Technical Report
7. AUTHOR(s) 10 (10) Irmtraud Streker/Seeborg		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS School of Organization and Management Yale University, 56 Hillhouse Avenue New Haven, CT 06520		8. CONTRACT OR GRANT NUMBER(s) 15 (15) N00014-75-C-0269
11. CONTROLLING OFFICE NAME AND ADDRESS Organizational Effectiveness Research Programs Office of Naval Research (Code 452) Arlington, VA 22217		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS NR 170-744
14 (14) 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) TR-12 12 (12) 29p.		12. REPORT DATE 11 (11) December 1976
		13. NUMBER OF PAGES 20
		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Job Intervention Task Organization Development Job enrichment Simulation Participation Job satisfaction		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  This research investigates three questions regarding employee participation in job redesign: (1) If given the same background information, will supervisors and employees focus on the same aspects of jobs in redesigning them? (2) Do employees show the same affective reactions to jobs designed by supervisors versus jobs they design themselves? (3) How does the mode of implementation affect the impact of job changes when identical changes are made? To research these questions, a 2 1/2 day simulation of an		

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## The Influence of Employee Participation

### In Job Redesign

Irmtraud Streker Seeborg

Job redesign is defined here as the alteration of specific jobs (or an interdependent system of jobs) with respect to job content such that the job (a) increases the quality of the work experience of employees; (b) provides employees with more responsibility, more feedback from the job, and/or more opportunity to use their skills; and (c) increases employee motivation. This definition is narrower than others sometimes used; it excludes changes directed only at working conditions.

Major theories of job redesign have been advanced during the past two decades and a number of literature reviews outline these and/or report examples of more or less successful implementation of job redesign (see, for example, Glaser, 1975; Hackman, 1977; Katzell & Yankelovich, 1975). The major focus of most publications is on the job changes to be made. But it has recently been recognized that the reasons why job redesign fails in many cases appear to be grounded at least as often in the way changes are implemented as in the intrinsic merit of the changes themselves (Hackman, 1977).

One question that needs to be investigated regarding the implementation of job redesign is who designs the new jobs—the workers on the job, the immediate supervisor, or a team composed of higher management and consultants. All these approaches have been tried (see, for example, Doyle, 1971; Glaser, 1975; Ford, 1969). But no comparisons are available where more than one method was used for the same job, and no theoretically based recommendations about this question have been made.



The research reported in this paper addresses the problem of employee participation in work redesign. Three specific questions are considered; each question is based on arguments for and against employee participation in job redesign which have been voiced in the literature, and on research results concerning employee participation in aspects of the work life other than job redesign.

#### Research Questions

Nature of the changes made. The arguments that have been brought forth concerning employee participation include the following: employees should not be involved because they may not know enough about the total organization, may not feel comfortable testing out the boundaries of their jobs and making revolutionary suggestions, and tend to suggest changes that would affect the job environment and not the job content (Ford, 1969; Paul, Robertson, Herzberg, 1969); or: employees should participate in the redesign of their jobs because they can make reality-based substantive contributions and can provide better diagnostic data for pinpointing areas that need change (Glaser, 1975; Hackman, 1977).

Research evidence for either side is scarce. Paul, Robertson, and Herzberg (1969) mention one case where a group of employees suggested far fewer and less substantive changes than their managers, but not enough information is given to evaluate this result. In a study where employees participated in the development of pay incentive plans, Lawler and Hackman (1969) found that the plans developed by the participative groups were more successful than identical plans imposed by management--but in no way unique to the specific groups that developed them, indicating that employees did not use their knowledge of the group's specific circumstances to tailor the solution to their needs. While this case weakens the argument about reality-based contributions, it cannot be used to refute the

argument for participation in general.

The question which evolves is: If supervisors and employees are given the same theoretical background on job redesign and the same diagnostic information about the jobs to be changed, will supervisors and employees redesign the jobs in essentially the same way or will supervisors focus on some aspects of the jobs and employees on others? And will the resulting jobs lead to more favorable organizational performance in one case than in the other, or will the organizational effects be equal?

Affective responses. It has been argued that employees who are actively involved in the redesign process will be more knowledgeable about the new jobs, more committed to the changes, and feel less threatened by the change activities (Glaser, 1975; Hackman, 1977; Vroom, 1964). For these reasons, participation in designing the changes should lead to increased motivation and satisfaction.

On the other side, it has been argued that if workers are allowed to make suggestions, their hopes may be raised unrealistically, and problems may be created if not all of their suggestions can be adopted for some reason (Ford, 1969; Grote, 1972).

There is some evidence in the Lawler and Hackman (1969) study that participation in the development of the pay incentive plan increased understanding of the plan. There is little research reported on commitment or on the effect of raised hopes on workers' satisfaction. Therefore, the question can be asked whether employees' affective responses (i.e. motivation or satisfaction and resultant behaviors) to jobs redesigned by a supervisor differ from their responses to jobs which the employees themselves have redesigned.

Effect of implementation method, keeping job changes constant. Herzberg (1968) has argued that the content of the job is alone important and that participation in redesigning the job gives only a false sense of making a contribution.

If this is the case, the same job changes should, in the long run, lead to similar results in terms of employee reactions to the job even if the changes are implemented in different ways.

On the other hand, both Ford (as quoted by Glaser, 1975) and Hackman (1977) indicate that the way in which changes are implemented sometimes may be more important than the actual changes made. If this is the case, employees' reactions to a job redesign imposed by their supervisor should differ markedly from their reactions to the same design if they participated in its development.

The question to be explored is: How does the mode of implementation--implementation by the supervisor as opposed to implementation by the work group--affect the impact of the job changes if identical changes are made?

#### Method<sup>1</sup>

##### Simulation

To seek answers to the questions posed above, a 2 1/2 day simulation (15 hours of work plus meetings) was conducted as part of a workshop on work redesign. For this simulation, an organization was created with a three-level hierarchy: a plant manager, first-level supervisors, and workers. The organization's goal was to manufacture decision boxes, small electronic devices which can readily be made by one person, but which also can be manufactured in a short assembly line.

During the first work day (7 hours), all work groups produced boxes using the same job design. In an attempt to make the events of the first day as similar as possible for all groups, employees were prohibited from changing jobs or from helping each other. The product was assembled in five steps at four work stations as outlined in Figure 1. The two solderers concentrated on soldering pre-assembled pieces, with soldering position 2 requiring more skill than soldering position 1. Assembly position 1 did preparatory work for the



soldering stations, and the final assembler/quality controller assembled and tested the finished product. Only at final assembly could it be ascertained whether the product was functional.

Insert Figure 1 About Here

The supervisor's task was to train the workers, control the workflow, and order supplies when necessary. Each group was given sufficient supplies for five units at the start.

After seven hours of work, the jobs were changed for each group in one of three ways. In the supervisory condition, all supervisors met with a consultant and were introduced to the job characteristics model (see below and also Hackman and Oldham, 1976, for an exposition of the model). In addition the supervisors were shown data describing the workers' reactions to their initial jobs (which had been collected after 6 hours of work). After some discussion between the supervisors and the consultant, each supervisor individually redesigned the jobs for his work group.

In the participative condition, the consultant met with each work group and presented the same information that he had given to the supervisors in the supervisory condition. The work group as a whole then redesigned the jobs.

In the plant manager condition, the plant manager informed the supervisor that he wanted him to implement certain changes in his work group. (These changes had been developed by one of the participative groups, but the supervisors and the employees of the two groups in this condition were not aware of this fact). Neither the workers nor the supervisors in the plant manager condition were given any general information about job redesign, shown the data from the first survey, or asked for suggestions about possible job changes—all of which were done in the other experimental conditions.

After the intervention, each group worked for another day (eight hours) in

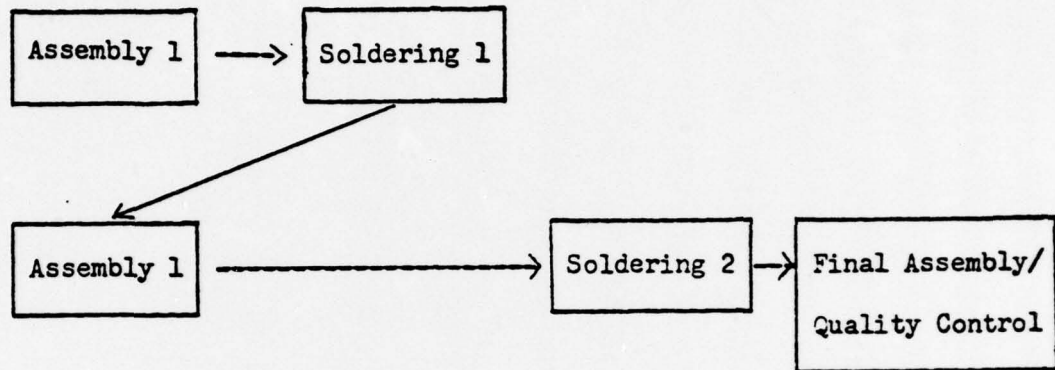


Figure 1. Workflow on first day

the newly developed jobs. No changes were made in working conditions or compensation during this day, and group membership remained the same throughout the simulation.

### Participants

Production workers and supervisors were recruited from business organizations in Connecticut and on the Yale campus and included, among others, work analysts, library personnel, and production supervisors. A total of 25 participants worked in five groups during the simulation. The sample included eight women (32 per cent).

Participants filled out a questionnaire about their technical skills prior to the workshop. From this, five persons emerged who had more soldering skills and experience with wiring diagrams than the others. These individuals were selected for the supervisory role and randomly assigned to work groups. The other participants were randomly assigned to work groups and work stations with the constraint that each group include at least one woman. A comparison of the groups on measures from the preliminary questionnaire showed no significant differences among groups.

### Job Characteristics Model

The model of job redesign used to guide redesign activities in the simulation is the Job Characteristics Model. This model is described in detail by Hackman and Oldham (1976) and is summarized briefly below.

Three psychological states—experienced meaningfulness of the work, experienced responsibility for outcomes of the work, and knowledge of the actual results of the work activities—are postulated to cause personal and work outcomes such as high internal motivation, high quality work performance, high satisfaction with the work, and low absenteeism and turnover. It is important that all three psychological states be present to achieve these outcomes.



To create these psychological states, a job must be high on some or all of the following dimensions: skill variety, task identity, task significance, autonomy, and feedback. Specifically, the motivational potential (MPS) of a job can be calculated as follows:

$$\text{MPS} = \frac{\text{skill variety} + \text{task identity} + \text{task significance}}{3} \times \text{autonomy} \times \text{feedback}$$

Thus, the first three job characteristics (all of which contribute to experienced meaningfulness) can substitute for each other, whereas the last two characteristics (which lead to experienced responsibility and to knowledge of results, respectively) are both necessary for a motivating job. The relationships are moderated by growth need strength: the correlations of job dimensions with corresponding experienced psychological states, and of the psychological states with outcomes, differ significantly between high and low growth need groups in most cases, with more strongly positive correlations usually obtained for high growth need groups (Hackman & Oldham, 1976; Zierden, 1975). This seems to indicate that increasing MPS has a stronger motivational effect on employees with high growth need strength.

A questionnaire, the Job Diagnostic Survey (JDS), has been developed specifically to measure the variables in the job characteristics model: the five job dimensions, the three psychological states, and affective responses such as internal motivation, general and specific satisfactions (see Hackman & Oldham, 1975, for a description). The questionnaire allows an assessment of actual job changes through a comparison of scores before and after job redesign, and its availability was one reason for adopting the job characteristics model for this research.

#### Research Design and Measures

The purpose of the project was to compare the three ways of implementing

job redesign previously described. To provide baseline data, all groups worked with identical job descriptions on the first day (7 hours). During this time, the JDS was administered twice: once at the end of the introduction given by the supervisor and once after six hours. The results of the second questionnaire have been used for comparisons since participants had developed a better feeling for the original jobs at that time. After the jobs had been redesigned, the JDS was again administered twice: once after about one hour of work on the new job and once after seven hours on the new job.

In addition, data were collected from observations and tape recordings. All conversations in the groups during working hours and change meetings were recorded on tape, and observers assigned to each group recorded the activities of group members.

To measure possible differences in the focus of change (the first research question), recordings of the change meetings, changes in written job descriptions, and JDS measures of the job dimensions were used.

The organizational outcomes usually expected from job redesign include high quality of performance and low absenteeism and turnover. To measure performance quality it was planned to use the proportion of completed boxes that actually worked according to specifications. An increase of this proportion from the first to the second day would have indicated an improvement of quality. A similar increase in all groups would be indicative of a general learning effect, whereas significantly higher increases in one condition would indicate an additional effect of the job changes in that implementation condition.

Turnover is not a meaningful measure in this setting since participants were restrained from leaving the simulation by their commitment to the workshop. As a proxy for absenteeism, behaviors such as coming late, leaving early, or spending a large amount of time away from the work area were observed. It was

expected that strong tendencies to leave the work place could also be detected in analyzing conversation samples from the tape recordings.

To assess the effects of the different ways of implementing job redesign on participants' affective responses, JDS measures of motivation and satisfaction (as well as observations of participant behaviors) were analyzed.<sup>2</sup>

### Results

The results are summarized below for each of the three research questions posed in the beginning of this paper.

#### Nature of the Changes Made

Focus of the changes. Two major differences between the supervisors' and the workers' redesign efforts were reported by the independent observers of the simulation. First, supervisors made conscious efforts to load the jobs vertically: training responsibility was given to the workers in both supervisory groups and in only one participative group, and the ordering of supplies was delegated to group members in one supervisory group and in none of the participative groups. Moreover, in their discussions of possible job changes, workers in the participative condition never even mentioned vertical loading.

A difference in reaction to this concept was already noticeable in the meeting with the consultant. The basic presentation of the model was the same for supervisors and work groups, but the supervisors discussed vertical loading in detail with the consultant and the workers did not. Since the discussion in each meeting was triggered by questions from the participants, this difference in discussion topics is consistent with the difference in focus in the actual redesign: questions of vertical loading may be more natural for supervisors than for workers. However, the consultant may also--albeit subconsciously--have been more inclined to dwell on this topic in detail with the supervisors (he knew that he was talking to supervisors in this meeting and to workers in



the others). It is, therefore, not possible to decide whether the meeting with the consultant caused the difference in emphasis or whether the employees simply did not grasp the concept or did not see the opportunities of loading their jobs vertically as did the supervisors.

Second, employees were concerned with the social impact of the change whereas supervisors were not. In both participative groups, employees emphasized repeatedly that they wanted to work together and help each other, and the main thrust of one of the participative designs was for the group to develop into a kind of autonomous work group, helping each other where necessary without changing the job assignments as such. There is no indication that either of the supervisors considered the social impact of the new jobs they had designed.

The concern with the social impact arose spontaneously in the work groups; the consultant did not talk about social issues in any of the sessions he held. It is possible that the warning to the supervisors not to involve their work groups in planning the job changes communicated a norm not to consider social effects. But the results also are consistent with the interpretation that there is a definite difference in the focus of the changes made by supervisors and workers, with supervisors concentrating more on questions of authority relationships (vertical loading) and workers being more concerned with social relationships.

Changes in job characteristics. Table 1 shows the changes in job dimensions from the end of the first to the end of the second day in the supervisory and participative condition. Participants described their jobs on each day after having worked in them for six to seven hours so that the degree of familiarity with the jobs was comparable at both administrations of the questionnaire.

Insert Table 1 About Here

Table 1

## Increase in Job Characteristics Scores After the Job Redesign

	Supervisory Condition			Participative Condition			t (Increases)
	Before Change	After Change	Increase	Before Change	After Change	Increase	
Skill Variety (SV)	2.37	3.54	1.17	2.25	3.46	1.21	.023
Task Identity (TI)	1.66	4.50	2.84	2.96	3.96	1.00	-1.855*
Task Significance (TS)	4.96	4.13	-.83	3.83	4.79	.96	3.241**
Autonomy (AUT)	3.17	3.75	.58	3.80	4.88	1.08	.736
Feedback from the Job (FJ)	4.08	4.50	.42	4.00	5.17	1.17	1.243
Feedback from Agents	3.71	4.29	.58	5.00	5.17	.17	-.229
Dealing with Others	3.25	3.67	.42	3.87	4.62	.75	.357
MPS <sup>a</sup>	45.50	67.00	21.50	46.00	99.50	53.50	1.826*

$$^a \text{MPS} = \frac{\text{SV} + \text{TI} + \text{TS}}{3} \times \text{AUT} \times \text{FJ}$$

\*p &lt; .10 (two-tailed)

\*\*p &lt; .01 (two-tailed)

In addition to an objective description, the results in Table 1 may reflect, to some extent, how the employees felt about their jobs. For example, autonomy—which should be influenced by vertical loading—increased more in the participative than in the supervisory condition, although the difference is not significant. It is possible that the score is attributable more to the method of change than to the actual changes—workers in the participative condition certainly had more opportunity to make decisions concerning their jobs than did those in the supervisory condition.

The significantly larger increase in task identity in the supervisory condition describes well the differences in the new jobs: in one of the supervisory groups, every person made the entire product, thus providing maximum task identity, and in the other group two jobs were created instead of four, giving each person a somewhat more identifiable piece of work. In both participative groups, most workers still did only a small part of the task and could not identify their work in the final product.

Changes in work behavior and performance. Quality of performance, as measured by the proportion of finished products rejected, was higher in the supervisory condition (only 31 per cent rejects as compared to 55 per cent in the participative condition). But this finding is inconclusive: only a small number of working boxes were produced on the second day—and, since only one was produced on the first day, there is no baseline for comparison.

The clinical data appear to indicate that the characteristics of the changes made had more influence on workers' concern with producing working units than did the method used to implement the changes. Those workers making entire units showed more concern with quality and pride in their work than did employees working in teams regardless of implementation condition.

Likewise, the desire to stay or leave appeared to be influenced more by



the changes made than by the mode of implementation. The topic of leaving was not salient for any group. But persons making entire units were generally more hesitant to leave and had at times to be forced to quit working, whereas those working in teams were ready to leave early.

Summary. The results appear to point out a difference in emphasis between the efforts of supervisors and employees. The supervisors attempted more conscientiously to implement the job characteristics model and made changes increasing task identity and workers' area of responsibility. Workers were more concerned with social aspects of the work and judged their new jobs to have increased autonomy and task significance although no job changes were made involving these job dimensions; their assessment even of the "objective" job characteristics appears to have been influenced by affective responses. Neither the supervisors nor the workers themselves made very radical changes, which may explain the lack of more clearcut differences between conditions.

#### Affective Responses

The changes in affective responses on the JDS that accompanied the job redesign efforts are shown in Table 2.

#### Insert Table 2 About Here

The pattern of the changes in satisfaction scores is very consistent--a greater increase is observed in the participative condition than in the supervisory condition for all variables, and all scores decreased in the plant manager condition. Only the differences in social satisfaction are significant.

The observer reports also indicate an impact of the participative implementation method on the relationships among group members. In one of the participative groups, the work proceeded in almost total silence for most of the first day, whereas an amiable climate developed after the intervention and an average amount of interaction was observed. Members of the other participative

Table 2

## Increase in Affective Responses After the Job Redesign

	Supervisory Condition		Participative Condition		Plant Manager Condition		<u>F<sup>a</sup></u>			
	Before Change	After Change	Increase	Before Change	After Change	Increase				
Internal Motivation	4.94	4.96	.02	5.39	5.42	.03	4.96	3.75	-1.21	3.045
General Satisfaction	3.80	3.80	.00	3.80	4.20	.40	2.45	1.90	-.55	.984
Social Satisfaction	4.67	5.25	.58	4.42	5.71	1.29	3.59	2.92	-.67	6.496*
Supervisory Satisfaction	5.71	5.92	.21	5.87	6.29	.42	5.50	5.17	-.33	1.261
Growth Satisfaction	3.44	3.75	.31	3.50	4.22	.72	1.75	1.56	-.19	2.604

<sup>a</sup>ANOVA, 2 and 17 degrees of freedom

\*p &lt; .01

group showed considerable interest in each other's work. All group members of this group stayed even after the simulation had ended to observe one man completing the testing of his product; their staying appears to have had a social basis which could be attributable to the participative change.

Thus, the process of designing the new jobs in a group appears to have increased the feeling of belonging together, which is consistent with the significant difference in the increase in social satisfaction among conditions. This may be a desirable outcome on jobs which require cooperation of group members, but might be counterproductive on jobs which require individual achievement .

#### Effect of Implementation Method, Keeping Job Changes Constant

In the comparisons reported so far, it has been shown that both the actual changes made and the implementation method affected the results. To isolate the effect of the implementation method, it is necessary to compare groups where identical changes are made using different modes of implementation. In this study, the changes developed by one participative group were imposed on another group by the plant manager as part of the research design. Table 3 shows the changes in JDS scores which accompanied the job changes in each of these two groups.

#### Insert Table 3 About Here

Changes in individual job characteristics did not differ significantly between the groups except for task significance, which increased for the group which developed the changes and decreased for the group on which the changes were imposed. However, four of the five job dimensions showed a larger increase in the participative condition; as a consequence, the summary statistic MPS (motivational potential score) shows a significant increase ( $p < .01$ ) in the participative group and almost no increase in the plant manager group.



Table 3

Changes<sup>a</sup> in JDS Responses from Day 1 to Day 2

	Participative Group	Plant Manager Group	Difference <sup>b</sup>
<b>Job Dimensions</b>			
Skill Variety	1.08	.25	.83
Task Identity	.58	1.59	-1.01
Task Significance	.67	-1.42	2.09***
Autonomy	.91	.67	.24
Feedback from the Job	.92	-.42	1.34
MPS	45.00	6.75	38.25**
<b>Experienced Psychological States</b>			
Meaningfulness	.38	-.56	.94
Responsibility	.63	-1.04	1.67**
Knowledge of Results	.06	.13	-.07
<b>Affective Responses</b>			
Internal Motivation	-.04	-1.21	1.17
General Satisfaction	.85	-.55	1.40
Social Satisfaction	.83	-.67	1.50*
Supervisory Satisfaction	.34	-.33	.67
Growth Satisfaction	.75	-.19	.94**

<sup>a</sup>Fourth administration score minus second administration score;  
identical job changes made using different implementation methods.

<sup>b</sup>Participative group score minus plant manager group score.

\*  $p < .10$  (two-tailed)

\*\*  $p < .05$  (two-tailed)

\*\*\*  $p < .02$  (two-tailed)

Of the experienced psychological states, responsibility shows an increase in the participative and a marked decrease in the plant manager condition, leading to a significant difference between the two conditions.

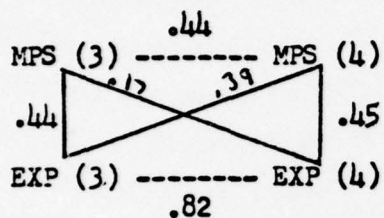
The largest effect of implementation method, holding job changes constant, is seen in the affective responses. All satisfaction measures show an increase in the participative group and a decrease in the plant manager group; in two of the four cases, the difference is significant.

The differences in satisfaction scores could be expected in comparing a participative implementation method with a top-down approach. But the difference in MPS--and in individual job characteristics--is surprising when it is considered that these questionnaire items call for an objective description of the job.

This suggests that experienced psychological states or feelings of satisfaction may influence employees' perceptions of the "objective" characteristics of their jobs. To test this possibility, a number of correlations were computed between JDS scores at the beginning and the end of the second day, for all workers. Job characteristics are represented by MPS and experienced psychological states (EXP) by the product of experienced meaningfulness, responsibility, and knowledge of results.<sup>3</sup> Figure 2 shows static and cross-lagged correlations for MPS, EXP, and several satisfaction measures.

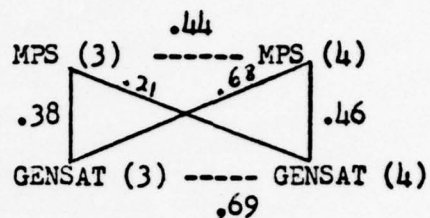
Insert Figure 2 About Here

Since, in Figure 2(b), the difference between the two cross-lagged correlations is significant ( $p < .02$ ; see Kenny, 1975, for a description of the significance test), the hypothesis that general satisfaction contributes to perception of job characteristics appears more likely for this sample than the alternative chain of causation postulated by the job characteristics model--namely, that job characteristics lead to experienced psychological states which,



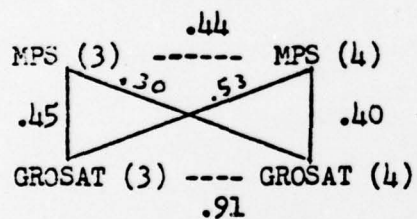
Motivational Potential and  
Experienced Psychological  
States

(a)



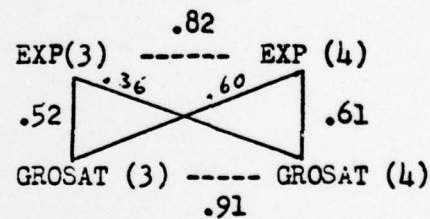
Motivational Potential and  
General Satisfaction

(b)



Motivational Potential and  
Growth Satisfaction

(c)



Experienced Psychological  
States and  
Growth Satisfaction

(d)

Figure 2. Cross-lagged correlations



in turn, influence satisfaction measures. Similar results are indicated in Figure 2(c) and 2(d) with the difference of the cross-lagged correlations approaching significance (.05) for experienced psychological states and growth satisfaction.

### Discussion

The simulation showed that supervisors focus more on vertical loading and employees more on social aspects of the job when asked to change and improve it. While this is consistent with some of the arguments made against employee participation (e.g., Ford, 1969), two comments are in order in interpreting this finding.

First, although an effort was made to provide the same information to supervisors and workers, the discussion with the consultant did not develop along identical lines in each case; specifically, vertical loading was discussed more with the supervisors than with the employees. This might suggest that the supervisors were, because of the consultant's actions, better prepared for vertically loading the jobs. One might argue, however, that the concept of vertical loading was discussed more in the meeting with the supervisors because the supervisors were more alert to this concept and pursued the discussion more diligently (the consultant attempted to respond to the concerns of the audience in each group). Moreover, by the nature of their role, supervisors could be expected to respond more to issues of responsibility and authority. Thus, one might consider this emphasis in the discussion as consistent with the supervisors' later focus in redesigning the jobs.

Second, the argument that workers should not participate in redesigning their jobs because of a possible difference in the target of change is based on theories of what makes a job motivating, and these theories are often applied to more complex jobs. In this case, the jobs were fairly uninteresting

and required skills which were not valued by most participants, even after the work was redesigned. It is possible that, in this case, participants valued social aspects more than they normally would, and that the process of redesigning the job had a larger impact than it might have had otherwise.

In the final analysis, employees are motivated by their jobs as they see them, not necessarily by the researcher's evaluation of the same jobs, and the implementation process may influence employees' perceptions. Consider, for example, the JDS scores which reflect the workers' descriptions of their jobs. These scores show comparable increases for most job dimensions and greater increases in MPS in the participative condition where the main thrust of the changes was not to improve job content. This appears to indicate that employees perceive the jobs which they redesigned as more motivating than those that are designed for them by management, even if the latter changes are theoretically "better;" therefore, participation cannot be ruled out on the basis of solution quality or the focus of job changes.

Participants' affective responses favor the participative implementation method. This is not surprising: almost all employees expressed a desire on the first day to work together and help each other, and the participative implementation method provided that opportunity whereas the supervisory method, together with the changes made in these groups that tended to isolate workers, denied employees the opportunity to work together on a meaningful problem. In addition, participation in job redesign may have provided a growth experience in an environment otherwise devoid of opportunities to satisfy growth needs. Since these results depend, to some extent, on the specific circumstances of the simulation, they can be generalized only with caution.

The comparison of the two groups in which identical changes were implemented clearly indicates that, in this simulation, the method of change was at

least as important as the actual changes made--and possibly more so. The effect of identical job changes appears to be more positive if employees have an input into the decisions leading to these changes. Two possible reasons for this effect can be hypothesized: (a) employees in the participative condition perceive the job changes which they suggest in a more positive light because they "own" them, whereas employees in the supervisory condition may focus their attention more on the negative aspects of the job because they resent the implementation method; or (b) participation may increase satisfaction which, in turn, may have an effect on the way in which employees view their jobs.

The results of the cross-lagged correlational analyses appear to indicate that the immediate impact of the implementation method is on satisfaction, and that increased satisfaction then causes an increase in perceived job characteristics and experienced psychological states. It is possible, however, that the investigation captured only initial reactions (which are more likely to be affective), whereas the impact of the objective job characteristics is felt later when more factual knowledge has been accumulated.

Another possibility which cannot be excluded is that the magnitude of the change has an influence on the direction of causality. For example, radical changes may lead primarily to a changed perception of job characteristics, with changes in experienced psychological states and satisfaction scores following, whereas with small changes, the change process has the more immediate impact, and a change in satisfaction then leads to a different assessment of job characteristics.

Further research is necessary to explore the circumstances under which satisfaction changes precede changes in perception of job characteristics versus those in which an improvement in job characteristics leads to an increase in satisfaction, as postulated by the job characteristics model.



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Footnotes

This research was supported in part by a grant to the author from the Manpower Administration, U.S. Department of Labor, under research and development grant No. 91-09-75-34, and in part by the Organizational Effectiveness Research Program, Office of Naval Research, under Contract No. N00014-75-C-0269, NR 170-744 (J. Richard Hackman, principal investigator). Since grantees conducting research and development projects under governmental sponsorships are encouraged to express their own judgment freely, this report does not necessarily represent the official position of the Department of Labor. The author wishes to acknowledge the assistance of J. Richard Hackman, Clayton P. Alderfer and William Zierden in conducting the workshop sessions on which this research is based. The author is now at Ball State University, Dept. of Finance and Management.

<sup>1</sup>See Streker (1976) for a complete discussion of the methods used.

<sup>2</sup>Clinical data from observations and tape recordings are only used occasionally in this report to aid in interpreting the JDS results. A detailed report of the clinical data can be found in the author's dissertation (Streker, 1976), from which this report is drawn.

<sup>3</sup>For the rationale for using this product score, see Hackman and Oldham (1976).